



Source Water Assessment Program (SWAP) Report for Heath Elementary School

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- ? Inventory land uses within the recharge areas of all public water supply sources;
- ? Assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the
Massachusetts Department of
Environmental Protection,
Bureau of Resource Protection,
Drinking Water Program

Date Prepared:
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Table 1: Public Water System (PWS) Information

<i>PWS Name</i>	Heath Elementary School
<i>PWS Address</i>	18 Jacobs Road
<i>City/Town</i>	Heath, Massachusetts
<i>PWS ID Number</i>	1130002
<i>Local Contact</i>	Mr. Philip O'Reilly
<i>Phone Number</i>	413-337-4742

<i>Well Name</i>	<i>Source ID#</i>	<i>Zone I (in feet)</i>	<i>IWPA (in feet)</i>	<i>Source Susceptibility</i>
Well #1	1130002-01G	136	436	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The Heath Elementary School is a rural elementary school located on the south side of Jacobs Road in Heath. The school student and staff population is approximately 135 people per day and is served by a single potable supply well (Well #1) located north of the school.

The well has a Zone I protective radius of 135 feet and an Interim Wellhead Protection Area (IWPA) radius of 438 feet based on an approved daily withdrawal rate. The well was tested under the New Source Approval Process and approved for a withdrawal rate of 1,728 gallons per day, (gpd) or 1.2 gallons per minute, (gpm). The 6-inch diameter

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

well is drilled to a depth of approximately 500 feet below ground. The driller's log states bedrock was encountered 42-inches below grade. The bedrock was apparently highly weathered and the casing, grouted into place, extended to 66-feet below grade. Bedrock outcrops were observed during the site visit confirming the shallow depth of bedrock. The geologic mapping of the area identified the bedrock as black to green colored amphibolite, greenstone, feldspathic schists and granulite of the Hawley Formation dating from the Ordovician. Although there are stratified drift, sand and gravel deposits nearby, there is little to no soil over the bedrock in the immediate vicinity of the well. The water does not require and is, at the time this report was prepared, not treated. You may request additional information regarding the quality of the water from the local contact listed in Table 1.

Please refer to the following section, attached maps of the Zone Is and IWPA's and Table 2 for additional assessment information.

2. Discussion of Land Uses in the Protection Areas

During the assessment, very few land uses and activities within the drinking water supply protection areas were identified as potential sources of contamination.

Key issues include:

1. **Underground fuel oil storage tank (UST)**
2. **Septic System**
3. **Floor drain in boiler room**
4. **Parking and roadway**

The source is fairly well protected. The Town owns the entire Zone I area and there are no identified land use activities within the Zone I other than passive recreation (walking trail). However, the well is located in an aquifer with a high vulnerability to contamination due to the absence of a significant hydrogeologic barrier to prevent contaminant migration from the surface. The overall ranking of susceptibility to contamination for the well is moderate, based on the presence of at least one moderate threat land use or activity in the IWPA, as seen in Table 2.

1. **Underground fuel oil storage tank** – The school's underground fuel oil tank and propane tank are located within the IWPA of the school well. The oil tank is located 405 feet from the well and is double walled with a monitoring system. The propane tank, also located within the IWPA, poses a minimal threat to water quality because of

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Underground Storage Tank (UST, fuel oil)	No	Yes	Moderate	Double walled tank with monitoring, edge of IWPA
Septic System components (not the leach field)	No	Yes	Moderate	Refer to the attached septic system fact sheet.
Floor Drain in the boiler room to septic system	No	Yes	Moderate	Floor drain must be protected from accidental spills
Parking area and roadway	No	Yes	Moderate	Grassy drainage swales

- **-For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I I. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

its gaseous nature if released.

Recommendations:

- ✓ Diligently monitor the status of the tanks and the delivery of oil.
- ✓ Consider long term planning of replacing the UST after its useful life with an above ground storage tank with containment.

2. Septic system components in the IWPA - The septic tank, grease trap, pipeline and distribution box are all within the IWPA of the well. A very small portion of the leach field is also on the perimeter of the IWPA. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems or discharge from the boiler room are also potential sources of contamination to the water supply.

Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator. The school is currently not registered as a generator of hazardous waste or waste oil. In order to participate in a Community Hazardous Waste Pick-up day, the school must be registered as a Very Small Quantity Generator. Review the enclosed document "A SUMMARY OF REQUIREMENTS FOR SMALL QUANTITY GENERATORS OF HAZARDOUS WASTE" to determine regulatory requirements.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.

2. Floor drain in the boiler room – Floor drains may be required in boiler rooms to provide drainage in the event of a plumbing failure. If there is a potential for hazardous materials to flow accidentally into the floor drain, however, preventive measures should be taken. Floor drains in an area that contains hazardous materials must be discharged to a sewer or a tight tank. The boiler room at the Heath Elementary School has a floor drain that is assumed to discharge to the septic system.

Recommendations:

- ✓ Oil lines from the tank to the boiler can be sleeved so that any leaks would drain back to the tank or minimal oil would leak to the boiler room. A written policy and plan should be in place during maintenance operations, especially when oil filters are changed.

- ✓ Require your boiler maintenance contractor to use containment, protect the drain and have absorbent materials on hand to prevent accidental leaks while conducting routine maintenance. Please note that boiler blow down generated during routine maintenance cannot be discharged through the floor drain and must be disposed of off site.

3. Parking and roadway - The parking area and roadway are within the IWPA of the well. Bedrock outcrops were observed along the side of Jacobs Road with the road drainage consisting of an earthen swale. Drainage from the school is discharged approximately 200 feet from the well to an area that topographically drains away from the wellhead.

Recommendations:

- ✓ Use minimal road salt and deicers.
- ✓ Request that the Town consider paving the drainage swale along Jacobs Road, immediately adjacent to the Zone I of the well to minimize the potential impact to the well from direct infiltration of road salt and road runoff into the exposed bedrock.
- ✓ Monitor the parking lot for spills and leaks.

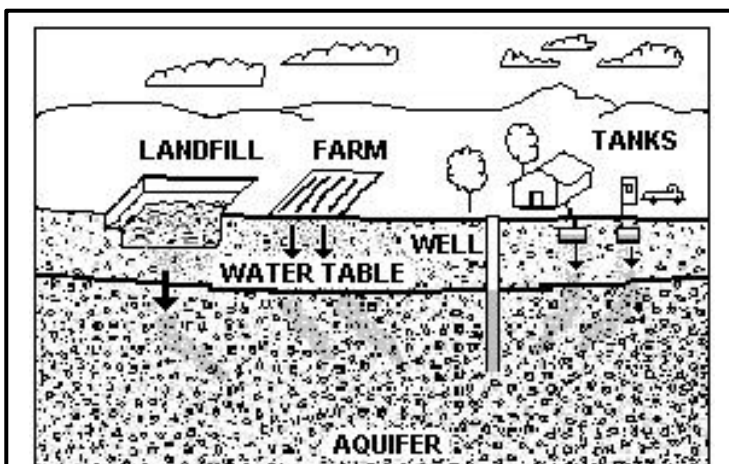


Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Catherine V. Skiba in DEP's Springfield Regional Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws/ including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, and the local media.

Other activities that were noted during the assessment were the agricultural activities within and just outside of the IWPA. Request that the landowners utilize Best Management Practices for their agricultural practices that include nutrient management. Be sure that they are aware that your facility is a public water supply. If they do not already have a farm plan, refer them to the Natural Resource Conservation Service. Alternatively, they may follow a plan developed through the publication *On Farm Strategies to Protect Water Quality: An Assessment and Planning Tool for Best Management Practices*. Information on funding and other resources for agricultural management is available through the Massachusetts Department of Food and Agriculture at (617) 626-1700 or <http://www.massdfa.org/bureaus.htm>.

Implementing the previously noted and following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. The Heath Elementary School is commended for current protection measures.

Please review and adopt the key recommendations listed above and as follows:

Zone I and IWPA:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Conduct regular inspections of the Zone I.
- ✓ Direct nature trails away from the wellhead. Look for evidence of unauthorized access. If necessary, fence off the wellhead to prevent access.
- ✓ Monitor activities and if there is evidence of increased activity or access, consider gating the wellhead.
- ✓ Post drinking water supply signs key location such along the access road and in the parking area.
- ✓ Provide information to staff about the potential hazards of household chemicals, lawn care chemicals and fertilizers.
- ✓ Use Best Management Practices (BMPs) for the use of fertilizer lawn care, pesticides and household hazardous waste.

Training and Education:

- ✓ Incorporate groundwater education into school curriculum (K-6 curricula available; contact DEP for copies).

Facilities Management:

- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the appendices for more information regarding septic systems.
- ✓ Concrete or earthen collars around the wellhead should slope away from well.

Planning:

- ✓ Work with local officials to include the school well's IWPA in an Aquifer Protection District Bylaws and to assist you in securing protection.

- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the 2001 "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note that each program year, on or about May 1 the Department posts a new Request for Response (RFR), grant application form. Generally, the applications are due on or about June 30. Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at <http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact sheet
- Your Septic System Brochure
- Grant Program Fact Sheet
- Source Protection Sign Order Form
- Very Small Quantity Generator (VSQG) information